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Human resource strategy for the new ICT-driven business context

Jan A.P. Hoogervorst, Paul L. Koopman and Henk van der Flier

Abstract The influence of technology developments on the content and arrangement of work is a recurring theme in many publications. Advances in information and communication technology (ICT) are reshaping internal organizational design and necessitate new types of employee capabilities and behaviour. As will be illustrated, ICT developments create a heightened level of business and market dynamics. Arguably, these dynamics affect the required capabilities and behaviour of employees even more strongly. Similarly, the way businesses are operating, and customer, supplier and business partner relationships are formed, is also affected by the rapid ICT progress. Key drivers shaping the new business context will be addressed. This paper argues that the trends and developments illustrated necessitate revision of traditionally held beliefs and paradigms. Said revision has important implications for the strategy and management of human resources, whereby the focus on employee behaviour is crucial. Two key aspects of a human resource strategy will be discussed, identified as HR alignment and HR enablement.

With the focus on employee behaviour, attention should be given to the organizational context, since this context determines employee behaviour. Said context is defined by organizational culture, management practices and various organizational structures and systems. In view of the necessary organizational change associated with the developments illustrated, the importance of consistency and coherence between the elements of the organizational context is stressed. Establishing change under conditions of consistency and coherence is therefore identified as a crucial organizational competence.

Keywords ICT developments; HR strategy; employee behaviour.

Introduction

Various scholars have addressed the impact of technology on society, and specifically human behaviour, from both a sociological and an anthropological perspective (Achterhuis, 1992). Arguably, technology developments can be described only in ways that are inherently ambiguous: prosperity and the increase in value of human life as well as the opposite can be witnessed. Some of these developments have caused society to reorganize itself around essentially new and revolutionary principles. Two historic examples can be mentioned. The first is believed to be the wheel. Evidently, this enabled society to develop an essentially different approach to transport and mobility. The clock can be considered as a second fundamental invention. Through the clock

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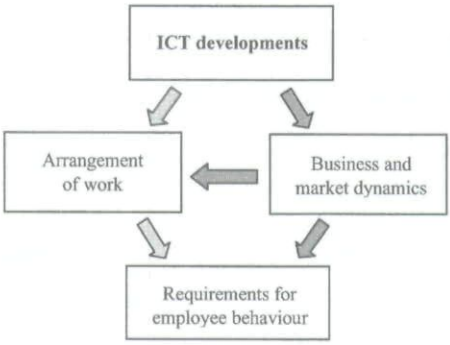

Figure 1 *Two forces driven by ICT developments on employee behaviour*

human beings de-coupled their experience of time from nature. It was no longer the cycle of day, night and seasons that determined the notion of time, but an independent device. As such, the clock served as a means to synchronize human behaviour. Appreciably, said technologies also fundamentally affected the nature of labour, as well as affecting social and interpersonal relationships. The eventual growth of mechanization rests on these core developments, and further changed society and the nature of labour, as exemplified by the Industrial Revolution. Probably more than any other aspect, technology defines the characteristics of society.

For a number of years now, revolutionary new technology developments have been noted in the area of information and communication technology (ICT). Labels such as the 'digital age', the 'digital dawn' or the 'digital revolution' have been coined to identify this historic development (Negroponte, 1995; McCann, 1997). As we shall show below, developments in the area of information technology shape the information-age society. Information also emerges as a measurable enterprise asset. These exploding developments – with the Internet as a primary engine – further fuel globalization, creating the 'networked' society and businesses. New business models and processes are subsequently emerging, which radically affect not only internal organizational design but also the distribution of knowledge and the very way employee capacities are deployed. Additionally, relationships with customers and business partners will become essentially different. In some respects, a reversal of the Industrial Revolution can be witnessed, whereby mass production in a labour-intensive era is shifting towards individualized production in an information-intensive era, with production based on customer preferences.

From an organizational perspective, two forces can thus be identified. One refers to the direct influence of ICT on the character and organization of work, and thus on employee behaviour and experiences. The other force refers to indirect effects on employee behaviour resulting from changing business and market contexts and dynamics brought about by ICT developments. This latter aspect will be the main theme of this paper, seen from the perspective of influence on employee behaviour and subsequent human resources management. Figure 1 schematically depicts the two forces.

Noticeably, the influence of the first force has been the subject of various publications. New technologies have created some form of virtual organizing with geographically dispersed tele-workers. Decision support and knowledge management techniques have shifted decision-making power and capabilities to lower organizational

levels (Davenport and Prusak, 1998). Further, through workflow management tools, the operation of organizational processes can be both optimized and integrated with multiple actors participating collaboratively (van der Aalst and van Hee, 1997). In itself, this has fuelled business process re-engineering that has additionally changed the nature of work. These developments have created new research domains, such as the field of computer-supported co-operative work, which focuses on co-operative work arrangements and their support through information technology with 'explicit concern for the socially organized practices of their intended users' (Bannon, 1998). Others have discussed IT-supported organizational learning capabilities (Ciborra and Andreu, 1998). Understandably, the influx of information and communication technology will change not only work content but also labour conditions, relationships and regulations (Andriessen, 1999). As mentioned above, the second force is of primary concern in this paper. It refers to necessary changes in employee behaviour enforced or evoked by changing business and market conditions, specifically manifest in different customer and business partner relationships as driven by ICT developments. Furthermore, business changes are required more expediently, with the aspects necessitating change often being outside the organization's sphere of control. This fuels the demand for greater flexibility and responsiveness. Figure 1 illustrates the fact that the second force driven by ICT has a double-sided effect: one affecting employee behaviour directly as a result of changing relationships with customers, suppliers and business partners and one affecting the content and arrangement of work. For example, the management of customer relationships will drive customer-oriented behaviour as well as the related internal organizational processes.

After the effect of technology trends on business and market dynamics has been illustrated, the impact on organizational design principles will be discussed, including the effect on the business model and business architecture. Based on the consequences argued for employee behaviour, the implications for a human resources strategy and deployment will be sketched. Two complementary aspects of a human resources strategy will be argued: one responding to the changing business context and, conversely, one that enables a new business context to emerge. The necessity of an iterative and dialectic interplay of these two aspects will be stressed, whereby the fundamentally different organizational characteristics associated with the two aspects will be argued. Finally, conditions for successful implementation of strategic choices are addressed. These conditions refer to an integrated approach, including business-process architectures, human resources, cultural values, management practices and various organizational structures and systems.

Business context

In this section we shall briefly sketch the business context from three different perspectives: (1) technology trends that shape the information society, (2) business trends driven by the technology trends and (3) trends in organizational design.

Technology trends

It is important to appreciate the essential forces that are currently driving the digital revolution. As a first force we mention the ever-increasing performance/price ratio of microchips. According to Moore's law, this ratio doubles every twelve to eighteen months. For example, in 1978, a Cray super computer was sold for $20 million and could process 160 million instructions per second (mips). In contrast, a 1995 home video game could be purchased for $299 and processed 500 mips (DiVanna, 1997)! It is estimated

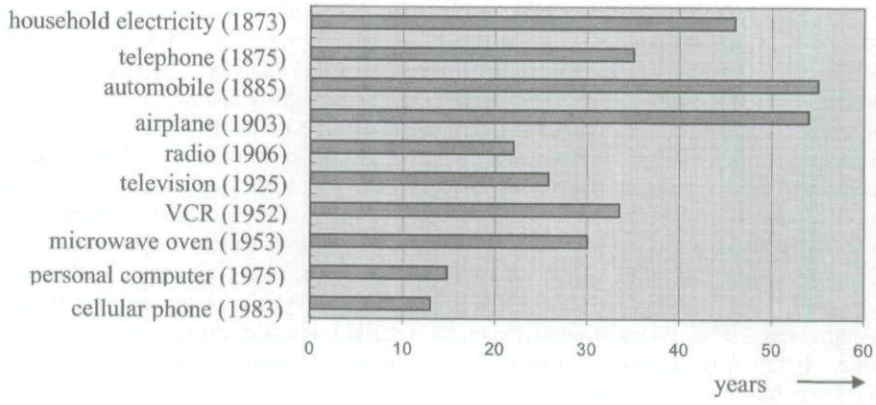

Figure 2 *Technology adoption rate to reach 25 percent of the population*

that Moore's law will hold for a considerable number of years. Hence, microprocessors can be embedded everywhere and cost almost nothing. The enormously growing capacity (bandwidth) to transmit data can be mentioned as the second force. As an illustration, 'a fiber with the size of a human hair can deliver every issue ever made of the *Wall Street Journal* in less than one second' (Negroponte, 1995). According to Gilder's law, in the next ten years the total (network) bandwidth will triple every twelve months (in Kelly, 1998). Third, an increasing technology adoption rate can be argued (DiVanna, 1997). While it took, for example, the telephone about thirty-five years to reach 25 per cent of the population, the cellular phone reached that level in twelve years. Even more strikingly, it took the telephone network about 100 years to reach the current density, whereas the Internet will get to the same level in five years (McCann, 1997). Figure 2 gives an overview of various technology adoption rates (DiVanna, 1997).

Arguably, in some cases the adoption rate is most probably also determined by the availability of an underlying infrastructure that enables the technology to be utilized. On the other hand, increasing demand might also drive infrastructural developments. The latter appears to be the case with cellular phones.

As a fourth force we might refer to the extreme convergence of media. Through, for example, interactive TV or web-TV the difference between PCs and TVs might disappear. Web-TV services are already being reported (Downes and Mui, 1998). Similarly, phones, laptops and palmtops will be functionally integrated. A well-known example is Internet access through cellular phones. Also, the current separation between telephone and data networks will probably cease to exist. Finally, as the fifth force, the emergence of the Internet with its standardized transmission protocol can be identified. This network allows the connection of everything to anything. Within a few years, the majority of devices connected to the Internet will not be PCs. These devices are expected to range from central heating equipment, coffee makers, alarm clocks, refrigerators and microwave ovens to cellular phones, cars and even toilets. Through utilizing the latter device, an immediate medical analysis might be provided, an online car diagnosis might be performed, while the refrigerator might inform the owner on his cellular phone that new items need to be purchased.

No doubt, this situation qualifies to be labelled as ubiquitous computing, and manifests a shift from the situation where many people shared one computer to the situation where many computers share each of us. It is expected that by 2005 the

Internet will have matured into a ubiquitous information utility for the retrieval or exchange of information between people and devices or between them mutually (Cooperstein, 2001). Hence, technology is changing everything and opportunities are multiplying exponentially. Social and governmental, as well as business, structures and operations will be fundamentally changed.

Business trends: e-business

Online services Noticeably, the enormous Internet growth is revolutionizing the way businesses are conducted and organized. As Tapscott (1998) estimates, 'the number of people online is growing by more than 50 percent every year'. Further Internet growth figures show that in the period 1995 through 1997 one new Internet address was created every three seconds (Downes and Mui, 1998). Growth rates are enormous in both business-to-business and business-to-consumer areas. Despite reports about online retail crashes, growth is still significant. Recent research showed, for example, that online sales in Europe more than tripled in 2000, whereby the number of online shoppers doubled. Similar growth is expected for 2001 (Woodham-Smith, 2001). Examples of goods purchased online are books, music, videos, software/hardware, airline or event tickets, (rental) cars, clothing and groceries.

Online services have the advantage of offering convenience at lower prices. Further, online services will increasingly make it easier to compare prices. Competition is thus not local any more. A clear business trend enforced through Internet utilization is thus the globalization of markets and competition. World-wide services for ordering and delivery of goods such as books and CDs are well known examples. This trend will be further enhanced through software 'agents' geared to specific on-demand and consumer-defined tasks, such as finding the lowest prices and comparing products and services. As can be appreciated, this new business environment truly acts as an open system where traditional measures or regulations for protection fail. These are additional aspects forcing the competitive game to change. As Negroponte (1995) notes, 'in an open system we compete with our imagination, not with a lock and key'.

Mass customization: customer self-service and self-design The concept of mass customization or one-to-one marketing refers to offering customers individualized products and services (Peppers and Rogers, 1997). Hence, the customer interface will change to an easier to use, and personalized, interface. It is argued that product marketing will consequently shift to relationship marketing. Having information on consumer behaviour and the ability to identify patterns and trends is therefore an essential element in gaining competitive advantage. The production process is affected essentially because mass customization will lead to adaptive products and services that are individualized, with production tailored to satisfy customer preferences. The ordering of personalized CDs, PCs, cars or clothes is a current example. So, mass production is changing into individual consumer-defined production, whereby mass marketing will become molecular, 'as every customer is treated as a separate market', while the mass media too will become molecular as the consumer pulls information based on individual demand (Tapscott, 1998).

Examples of customer self-service range from home banking and travel arrangements to the ordering of groceries, to name but a few. The possibilities for customer self-design are even more intriguing. Currently, technology firms are putting not-yet-finalized product designs on the web, and managing the process whereby a community of potential users finalizes the design to their desires. The scope of this approach is

almost unlimited. Imagine air travellers designing new in-flight meal offerings, potential house owners finalizing design or citizens helping the creation of new governmental regulations.

The context depicted above indicates a fundamental shift in the logic of business (Negroponte, 1995). This shift is occurring not only as the result of new distribution channels, but also as the result of less distinction between customer and supplier, or between product and services. If, for example, the customer, through interactive dialogue, obtains personalized services and products, then the customer is part of the production process. Instead of accepting the product or service at the end of the delivery process, the customer is positioned at the beginning of this process, defining its outcome. Similarly, offering services associated with physical products – as currently provided by some car manufacturers – will dilute the difference between products and services: the car manufacturers will shift to being a supplier of mobility services (Knox and Maklan, 1998).

Dilution of business boundaries The development of information technology allows the integration of various business processes that were traditionally separated. As such, these traditional business boundaries are being diluted and becoming diffuse and dynamic. This phenomenon has a far wider perspective than simply communication capacity providers complementing their activities with content services. For example, when people watching TV sports can order real-time – through web-TV – sports gear as shown on their screen, the sports net might enter into sports retailing. Hence, as the example shows, competition can come from non-traditional areas. Evidently, this is driving the focus towards the entire customer experience. Clearly, e-business will lead to a process of both 'dis-intermediation', whereby traditional intermediate functions are eliminated, and 're-intermediation', whereby new functions are created (David, 1994; Tapscott, 1998).

Business dynamics and the core theme of e-business The dilution of business boundaries indicates that markets are increasingly dynamic. Entry barriers are virtually disappearing. Agile and innovative competitors can enter markets very fast. New products and services appear, gain market share and cannibalize the offerings of existing suppliers quickly. Hence, both the decision-making process and the adaptation of internal organizational arrangements must accelerate to 'web time' in order for the organization to remain competitive.

Appreciably, e-business refers to networks of customers, suppliers and business partners. Essentially, the core economic imperative of the network economy is to amplify relationships and build trust. Fundamentally, this implies a shift from selling products in a short-term transaction-based fashion towards building relationships with a long-term orientation (Kelly, 1998; Shapiro *et al.*, 1999). As such, radical new interfaces with customers, suppliers and business partners are being created. By offering various complementary value-adding services to the core service offering, the total customer experience can be captured, subsequently enhancing customer loyalty. E-business thus entails new rules in a new economy (Kelly, 1999).

Organizational trends: reversing the Industrial Revolution

From a macro-perspective, the digital technology that created ever-increasing data processing and communication capabilities has led to the emergence of an information-

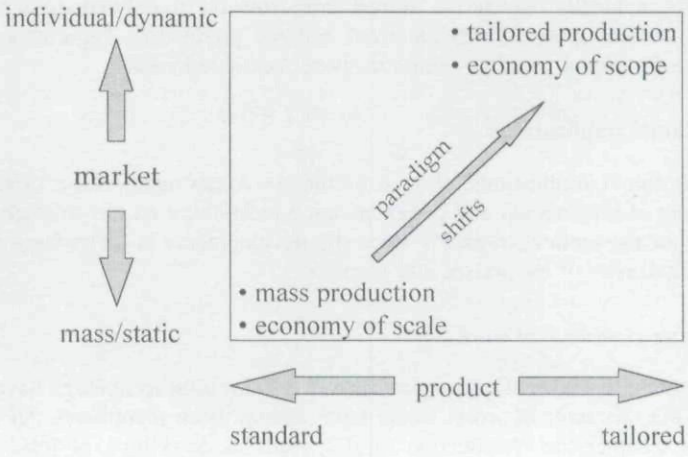

Figure 3 *Reversing the Industrial Revolution paradigms*

age economy. The business and technology trends discussed above illustrate this process. In turn, these developments are leading to the obsolescence of traditional organizational structures, management and operating principles (McCann, 1995; Ghoshal and Bartlett, 1997). Generally therefore, the principles of organizational design on which the Industrial Revolution was founded are becoming obsolete. Mass production during the Industrial Revolution yielded a declining cost curve. Because of the prevalent consumer wealth conditions and limited availability of products, consumers were willing to buy identical or similar products. In other words, mass production could be sustained because of mass demand. Mass marketing and mass communication are associated with mass production, as is a centralized organizational orientation to support the planning and production of mass goods. Mechanistic, hierarchical and centrally governed organizational entities are the well-known results of the Industrial Revolution. Notably, information about consumer preferences was neither available nor necessary, given the mass production principle. The paradigms associated with this business model appear highly resistant to change.

It needs little imagination to appreciate that centrally focused hierarchies and the associated planning principles fail when mass production and mass marketing lose their meaning. Reversing the developments of the Industrial Revolution implies a shift from the focus on the management of physical production power to the management of intellectual power (Drucker, 1992; Rothschild, 1990). Anticipating the discussion below, we might consider intellectual power with reference to innovation and the creation of knowledge regarding customers, suppliers, operational and decision-making processes, as well as regarding strategy development and deployment. At the beginning of the 1990s, the percentage of knowledge or information workers was estimated to be around 40 per cent for manufacturing and 80 per cent for service industries (Scott Morton, 1991). The developments illustrated above will most likely increase those percentages. Other sources report that, over two decades from the 1970s, about 90 per cent of newly created jobs in the US fall into the category of knowledge workers (Crawford, 1991).

Figure 3 graphically depicts the argued shift from the traditional mass production paradigms towards those of individualized, tailored production. Tapscott and Caston (1993) give additional paradigm shifts to those mentioned earlier.

Organizational implications

The organizational implications follow from the two forces mentioned earlier – one the direct impact of information and communication technology on the character of work and the other the indirect impact – since the developments in technology illustrated affect the dynamics of businesses and markets.

The changing character of work

Developments in the area of information and communication technology have multiple effects on the character of work. Some have already been mentioned. An important question is whether the introduction of ICT leads to de-skilling of jobs. We shall elaborate on this issue in the section about human resources strategy, and demonstrate that, although initial, historic ICT utilization suggests more de-skilling than upgrading effects, this does not generally hold for current, more sophisticated ICT deployment (McKersie and Walton, 1991; Yates and Benjamin, 1991).

Essentially, in the information age, employees will increasingly become 'knowledge workers' using brain skills instead of manual skills, with primary tasks in developing, creating, integrating and applying knowledge. In the words of Zuboff (1988), work and organizational processes become *informated* rather than *automated*. Hence, organizing entails 'the integration of specialized knowledge into a common task' (Drucker, 1992). Intense interdependencies and interconnectedness of organizational tasks and functions require that knowledge be shared and integrated. Consequently, this results in increased interrelatedness or 'sharedness' in goals, tasks, information, knowledge, experiences, as well as responsibilities (Osterman, 1991). As indicated, computer-supported co-operative work systems address this theme. Hence, unlike the traditional division of labour, this approach aims at integrating distributed activities, facilitating co-ordination, distributed decision making and knowledge sharing (Bannon, 1998). Here informational systems serve as effective means to incorporate core capabilities into the firm's organizational context (Ciborra and Andreu, 1998).

Further, co-operative work structures supported through informational systems might relax the rigidity and inertia associated with traditional, formal hierarchical structures that constitute the embedded system of rule. Centralized data, information and knowledge can be utilized with decentralized authority and responsibilities. Centralization and decentralization are thus addressed simultaneously. Units have freedom to act within the boundaries of shared guiding principles and operational rules. These operational rules can easily be changed (such as with workflow systems) and can be semi-permanent, temporary or *ad hoc*.

Additionally, the organizational structure will be of less importance. Hierarchies and traditional centralized control seem less appropriate for networks of teams and individuals connected through virtual links. Further, the reduced importance of structure also follows from the needed end-to-end business process focus, as will be argued below. Further, management and coaching of a virtual workforce will be significantly different. Understandably, the 'social fabric' of the organization will also be affected by the virtualization of relationships. Hence, the organizational culture, seen as shared norms and values, will be harder to establish. Different approaches to establishing

culture will be required. Trust is seen as vital to the success of the virtual organization, because traditional management control principles cannot be exercised.

Implications for the business model and business architecture

The reversal of the Industrial Revolution brought about by the digital dawn entails various related shifts in market, consumer, managerial, organizational, economic, cultural and human resource principles accompanying the departure from mass production. Existing paradigms can keep the organization captive in a given mindset, because of the 'tyranny of the dominant logic' (Prahalad, 1995). Often therefore, the issue is not only about learning new things, but about managing the 'forgetting curve as well'. True, some 'hype' is often connected to the developments described, necessitating mitigation of all-too-high expectations of these developments. More recent e-business failures seem to stress this point. Nonetheless, it seems fair to say that, on one hand, rapid ICT progress will have fundamental lasting effects, while, on the other hand, the existing mindset and organizational paradigms will limit organizational responsiveness in respect of ICT developments. While the capabilities of organizations are therefore bounded, we are convinced that organizations should filter out 'hype characteristics' and consider the fundamental implications of the developments outlined. These implications will be sketched at the level of the business model and business architecture.

Digital business is one that melds innovative technology with business model change to create competitive advantage. This is far more than being presented on the Internet, or adding '.com' to the company name. Put differently, e-business is not just another channel, but amounts to the design of a new business model. A business model can be viewed as a complex, multi-dimensional construct, expressing both strategic business intentions, on one side, and the core principles that guide how a particular field of commercial endeavour will be explored for achieving the intentions, on the other side. One might say that the business model expresses key principles on which the organization bases its ability to grow and survive. Core elements of the model express, for example, the revenue-generating principles. Sometimes therefore the business model is identified as a profit model. Obviously, underlying economic principles are part of the business model. Clearly, an organization engaged in mass production to answer mass demand will operate under different (economic) principles than an organization seeking to gain revenue by focusing on life-time customer value and customer relationships. In the same sense, supplying core services virtually for free, while gaining income through complementary services or activities, defines yet other business model principles. According to Kelly (1998), the digital business entails a new model based on new rules in a new economy.

Various authors identify core aspects of the e-business model, based on the focus on relationships and making every activity a customer-driven activity (Kalakota and Robinson, 1999; Vervest and Dunn, 2000). The core aspects can be summarized as:

- Making the customer the centre of decision making. This refers to awareness and a heightened sensing of customers, markets and how they are changing, as well as how the company's own capabilities should be developed and leveraged relevant to this focus.
- Making access to customer information what drives the organization. Among other things, this points to 'connect-ability' and an integrated view on customers, including both a communications and (customer) knowledge management infrastructure that links well with the marketplace

- Ensuring excellent management of fulfilment. Here, the integrated process view plays an important role, as well as the ability to forge relationships with trading partners.

The principles in the multi-dimensional business model must be mutually consistent and coherent, and they must be changed in concert for the new business model to succeed. We shall address this issue in a separate section below.

The business model is supported by a business architecture, which can be defined as a multi-dimensional construct expressing principles that guide how the elements of the business model are actually organized and executed. In summary, the model refers to principles that guide how a particular field of commercial activity will be *explored*, whereas the architecture refers to principles about how the organization, its capabilities and competences are to be *designed*. Understandably, the view on human resources is expressed by the business architecture. The view that treats human resources in an instrumentalist, Taylorist manner leads to different principles than the view that considers human resources as crucial for organizational success. Additionally, the business architecture expresses principles about operational resource allocation and decision-making processes. These have to do with overall governance principles. To give an example: roughly speaking, prior to the 1990s the management literature generally advocated that the business should be optimized at the business-unit level, under the assumption that this would lead to overall optimization. Key themes were decentralization, combined with local authority and empowerment. Associated with this view is a departmental rather than a process view. Additionally, various organizational structures and systems, such as accounting and management reporting, enforced the departmental view. However, as a result of new business themes, such as extended value chains, globalization and the integrated (360-degree) view on customers, the notion emerged that business should be optimized end-to-end. Selective local sub-optimization is thus a necessary consequence. The e-business characteristics presented above indeed necessitate this new business perspective: the offering of integrated services and the focus on customer relationship management have accelerated the requirement for an end-to-end view that is capturing the total customer experience. Clearly, traditional structures and systems do not naturally provide this orientation, while traditional economic models or revenue models might be more production oriented than customer relationship oriented. Further, end-to-end optimization is likely to be impeded by conflicts between traditional distribution channels.

The economic model and customer relationship management

With reference to the remarks made in connection with the business model, the economic model refers to the basic revenue-generating principles. Based on the e-business focus, a customer-centric view is stressed. Hence, the underlying economic model refers to the economics associated with, for example, customer satisfaction, customer retention and lifetime customer value.

Various authors have addressed these themes. To cite a few: a five to six times higher cost level is needed to attract a new customer than to retain an existing customer, while customer retention has been shown to have a significant effect on profitability (Zemke, 1989; Hart *et al.*, 1990; Heskett *et al.*, 1990). Under the label 'service profit chain', a formal economic model has been developed (Heskett *et al.*, 1997). Essentially, 'service profit chain thinking maintains that there are direct and strong relationships between profit, growth, customer loyalty, customer satisfaction, the value of goods and services

delivered to customers, and employee capability, satisfaction, loyalty, and productivity' (Heskett *et al.*, 1997).

The argued focus on relationships in the e-business domain necessitates, in our view, a humanistic, rather than an industrial view on service delivery. Unlike the latter view, the former view is based on the conviction that people are the primary providers of service (Schlesinger and Heskett, 1991). Empirical data provide strong support for this belief. For example, surveys covering various types of industries show that almost 90 per cent of customer complaints relate to items other than the product itself, and particularly to the manner in which customers are treated (Martin, 1992). Other sources similarly identify that about 70 per cent of the customer satisfaction rating is directly related to the performance of employees, rather than the performance of the product or service (Sanes, 1996), and, conversely, 65 per cent of customer defection is the result of inadequate performance of employees (Schlesinger and Heskett, 1991). Finally, studies confirm that loyalty and customer retention are significantly increased through well-performed service recovery (Hart *et al.*, 1990). A relatively small increase in retention can increase profits significantly (Kalakota and Robins, 1999).

These observations still hold in the e-business domain. First, not all customer relationships are established through system-like interfaces. Second, the latter type of interfaces can also be effectively complemented by human interaction, for example, through providing assistance in problem solving, clarifying customer requests and complaints or directing customers to other products or services in a value-adding manner.

The fundamental choices about the revenue-generating principles in a business model likewise entail fundamental impacts for (1) the management of human resources and (2) the (management) informational systems. These tie back to making the customer the centre of decision making and access to customer information the key driving force, as mentioned earlier. Defining, collecting, storing, distributing, accessing and analyzing customer data from various perspectives in an integrated manner is thus an essential aspect of e-business, in order to understand the company's customers from multifaceted perspectives. Effective customer relationship management, based on integrated sales, marketing, service delivery, strategy development, HRM and technology deployment, provides a source of competitive differentiation (Kalakota and Robinson, 1999).

Implications for human resources deployment

In summary, the ICT advances briefly discussed in the above have the following effects. First, from an overall business perspective, ICT drives fundamental changes in markets and competition, while a heightened level of business dynamics is created, subsequently fuelling the need for increased business agility. New strategic opportunities quickly emerge. These dynamics affect product and service offerings, as well as their lifecycle. Second, from an organizational perspective, ICT deployment leads to, but also necessitates, the integration of organizational functions, and an end-to-end process orientation, regarding, for example, production, logistics and customer relationship management. The increased interrelatedness was mentioned earlier. This refers not only to internal organizational processes, but similarly to external processes that deal with suppliers and trading partners. Understandably, these developments add to the diffusion of traditional business and organizational boundaries. Third, as emphasized, the new economy driven by ICT has a strong focus on relationships. These will change, not only among organizational members but, more importantly, also between the organization and its customers, suppliers and business partners. All these relationships rest on the 'informating' of business and customer processes. Dramatically increased connectivity enhances both

form and content of relationships. Finally, as a direct effect, ICT changes the nature and content of work and jobs. Not only because of virtualization of the organization, and the compressing of time and distance, but also since different skills and competences are required. In short the following characteristics can be observed:

- Increased dynamics
- Integration and diffusion of boundaries
- Focus on relationships
- Increased uncertainty
- Changing work and job content.

We shall address these characteristics from the perspective of employee behaviour, and subsequently discuss the implications for the human resources strategy.

Increased dynamics

Paramount among the characteristics of the new business context are the pace and ubiquity of change. Exploding opportunities are opened by the globalizing economy, technology progress, business reformation with diffuse boundaries, reconfiguration of competitive forces, large-scale deregulation and the shift in strategic assets, such as towards knowledge and information. Increased dynamics require increased organizational capabilities for innovation, renewal and adaptation. This capability is far from trivial. In order to deliver a predictable quality of service, organizations attempt to formalize processes and activities, traditionally through procedures and regulations. Unfortunately, highly formalized organizational domains are unlikely to produce innovation and renewal, since the perceived need to control subjugates individual creativity and initiative (Ghoshal and Bartlett, 1997). Hence, a critical organizational competence refers to the ability to create both relatively stable organizational domains that deliver (predictable) quality of service, as well as create relatively unstable organizational domains that enable patterns of renewal, innovation and adaptation to emerge. However, innovative experiments imply less formalization and might fail to deliver on expectations due to the lack of eventual formal embodiment in organizational processes. The aforementioned competence therefore needs to be complemented with the ability to execute integrated organizational change, such that quality of service of new product and service offerings is established and maintained.

This picture paints a delicate balance or iterative and dialectic interplay between stability and instability, exercised at 'the edge of chaos' (Stacey, 1996; Brown and Eisenhardt, 1998). Given the increased level of dynamics, the iterative interplay should take place with increased frequency. Definite new human resource capabilities are required in order to propel said iterative interplay.

Integration and diffusion of boundaries

We have emphasized that advances in ICT both enable as well as force significant integration and interrelatedness of various operational and customer processes, such as production, logistic or fulfillment processes. Because of the argued diffusion of business boundaries, internal processes are extended towards various suppliers and business partners. Understandably, the more integrated the various processes are, the higher the likelihood of errors in the end-to-end chain. Since errors or incidences of non-quality affect a larger chain, costs of non-quality will significantly increase. From the literature about total quality management it is known that these costs amount to 10–20 per cent of the organization's yearly income (Crosby, 1980). Oakland and Porter (1994) estimate

that, for service industries, this figure will be between 35 per cent and 45 per cent. Arguably, the increased level of business dynamics will further aggravate the effect of errors in the end-to-end chain.

Trying to remedy errors in a traditional control-oriented management fashion seems virtually impossible. Most likely, in large part, management is knowledgeable neither about the amount of problems nor about their solution. One survey reported that management knew only about 4 per cent of the problems encountered by factory workers (Whiteley, 1992). Elsewhere we have argued that safeguarding the delivery of quality in business processes requires a high degree of employee involvement (Hoogervorst, 1998). This involvement is manifest in specific employee behaviour that the underlying human resources strategy should enable.

Focus on relationships

Amplifying relationships was shown to be a core theme in the new economy. This has to do with customer-centric values, behaviour and decision making, manifest in the business model and architecture. Two aspects play a role. First, ICT systems should be designed and utilized to capture, distribute and analyse customer data to further intensify relationships and add customer value. Second, as said, not all aspects of relationships are defined through system-like interfaces. Recalling the service aspects mentioned earlier, customer satisfaction and loyalty for a large part depend on employee behaviour. In the end, all business is service business. As with quality, specific employee behavioural characteristics are required. Suggestions for these characteristics will be given below.

Increased uncertainty

The section on increased business dynamics mentions multiple forces that, although different in many areas, share the effect of increasing organizational uncertainty. Additionally, the integrated environment, as described, with a high degree of interrelatedness leads to a higher level of complexity. Essentially, ambiguity, unpredictability and uncertainty are associated with complexity. Various non-linear interdependencies, with positive feedback and whereby consequences of actions are dispersed in space and time, limit the establishing of cause-effect relationships. Arguably, management methods that seem suitable for relatively stable environments are ill suited to address or contain uncertainty. Control in these cases therefore does not follow from a priori defined forms based on assumed causality, but, rather, control is 'emergent control' (Kelly, 1994; Stacey, 1996). We concur with those authors who argue that emergent control can be established only through local freedom and self-organizing capabilities (Stacey, 1992, 1996; Wheatley, 1994). New order may emerge from chaos and uncertainty in an unpredictable way through a process of self-organizing, which essentially rests on learning capabilities. Productivity, quality, service, customer orientation and the response to the dynamics identified, all require employee involvement in continuously rectifying or addressing emergent deficiencies or necessities. Hence, the capacity for emergent control rests on human resource capabilities.

Work and job content

Earlier we indicated that the introduction of ICT increases rather than decreases work and job content. The reason lies in the fact that the argued increased levels of

interdependence also increase the complexity of roles, and thus the required levels of skill (Rockart and Short, 1991). Networking, interdependence and collaborative problem solving are argued to necessitate capacities 'for higher-order analysis and conceptualization and the intuitive capacity, experience, and interpersonal skills necessary to work effectively with others' (Rockart and Short, 1991). Although the impact of technology is contingent, the general opinion tends to disfavour the de-skilling argument. Further, basic concepts and values about human capacities fundamentally determine whether ICT factually entails de-skilling. A Tayloristic and Theory X view is highly likely to bring forward a similarly focused ICT deployment (Osterman, 1991). De-skilling is thus not inherently connected to the utilization of ICT, while exploiting the possibilities of ICT rather requires skill upgrading, which also creates a positive motivational effect. As said earlier, in an integrated environment, where activities are tightly linked, the error probability increases, and also the costs of errors. This calls for employee skills and capabilities that understand the systems, and can effectively anticipate and respond to problems. Skill upgrading further follows from the 'increased role complexity brought on by continuous changes in products, markets, processes, and organization' (Osterman, 1991).

Characteristics of employee behaviour

Based on the analysis of a number of domains where organizations need to be successful, we have defined the relevant characteristics of required employee behaviour (Hoogervorst, 1998). These domains are: *productivity*, *quality* and *customer and service orientation*, as the more output-oriented domains, and *organizational control*, *organizational learning and innovation* and *human resources management*, as the more internally oriented domains. The following five behavioural characteristics, or dimensions, were defined, which are relevant in the context described above.

An essential underlying element regarding these common characteristics is employee self-initiated behaviour, hence the ability to undertake action. Recalling the contextual dynamics mentioned earlier, this aspect is evidently relevant with respect to continuous improvement in the areas of productivity, quality, service and customer orientation. Continuous improvement requires behaviour directed towards removing errors and increasing performance. The dimension *achievement* characterizes behaviour directed at reaching goals. Hence, the dimension expresses a desire to achieve and a drive to accomplish (Moss Kanter, 1983). Others similarly refer to being performance driven, or showing an 'intrapreneurial attitude' (Leonard-Barton, 1992). Improvement rests for a large part on employee creativity and the generation of new ideas, as expressed by the dimension *creativity*. Inspiring individual initiative and creativity in employees is considered a core organizational capability, whereby pockets of entrepreneurial activities are leveraged through an integrated process of organizational learning (Ghoshal and Bartlett, 1997). The dimension characterizes the behaviour of employees regarding solutions to work-related problems or ideas to improve processes. Hence, the dimension expresses the ability to think, and reflects the spirit of innovation (Argyris, 1993). Creativity is further required to address organizational contingencies, thus to deal with uncertainty and unpredictability (Easterby-Smith, 1990). Self-renewal and self-organizing are viewed as crucial for organizational continuity and dealing with complexity. A heuristic learning process aids the process of self-renewal and self-organizing. In this respect, the dimension *open-mindedness* expresses employee behaviour reflecting an openness to change (Armstrong, 1992). Others speak of responsiveness to the need for change or employee flexibility (Drucker, 1985).

Numerous authors have addressed the issue of employee involvement and participation both from the organizational performance perspective (e.g. Deming, 1986; Heskett *et al.*, 1990; Juran, 1991; Schneider and Bowen, 1993; Dean and Bowen, 1994) and from the human resource perspective (McGregor, 1960; Likert, 1965; Sashkin, 1989). Participation is conditional for dedication, loyalty, ownership, as well as self-development. Hence, the dimension *participation* expresses behaviour that shows involvement with, and integration into, the organization. Finally, in line with the end-to-end integrated process orientation, quality, service and customer orientation require an end-result and goals-related behavioural focus. Contrary to departmentalism (Moss Kanter, 1983), behaviour should thus reflect a clear sense of organizational purpose and mission (Juran, 1992). As the fifth and final characteristic therefore, the dimension *mission-attitude* expresses behaviour directed to the organizational end-product and aligned with the organizational purpose and mission.

Elsewhere we have argued that employee behaviour is determined by the organizational context in which employees operate. This context is defined by the organizational culture, the management practices and the organizational structures and systems (Hoogervorst, 1998). As further discussed below, changing behaviour implies changing the context. As Ghoshal and Bartlett (1997) observe, 'in the end therefore, the power of that behavioural context lies in its impact on behaviour of individual organizational members'. So, 'rather than focusing on changing individual behaviours, the more important challenge is to change that internal environment – what we call the behavioural context – that in turn influences people's behaviour'. This seems an important aspect for a human resources strategy. Hence, this strategy should address coherently and consistently all contextual aspects that determine employee behaviour. Indeed, our own research identified strong relationships between employee behaviour and the behavioural context, as well as between the three elements of the context (Hoogervorst, 1998).

HR alignment and HR enablement

Various authors have stressed the crucial importance of employees for organizational success (Csoka, 1994; Pfeffer, 1994; Prahalad, 1995). In view of the trends discussed above, employee behaviour will become increasingly important. Indeed, the focus on customer relationships, the networked, virtual organization, the need for increased organizational agility and responsiveness, as well as the strong shift to information-intensive work, support this position. A fundamental issue that continues to remain valid relative to human resources management regards the question whether human resources management follows the organizational strategy or should be considered as a strategy in and of itself. Traditionally, the HR strategy is defined as a consequence of the business strategy; hence the HR strategy is driven by, or follows, the business strategy. This aspect is identified as 'HR *alignment*'. Within this view, human resources management often gets a more instrumental character, often merely focused on traditional personnel management elements. The direct impact of ICT deployment on work and job content can be considered as a HR alignment aspect.

Recalling the indirect effects resulting from business and market dynamics, another important aspect should be mentioned. It can be argued that strategy formulation is not a linear, analytical process. Rather, strategy emerges through an iterative, synthetic process stimulated by numerous influences that originate from internal organizational conditions, as well as from the external influences identified, such as competitor behaviour, market and consumer trends, but also trends in technology and society

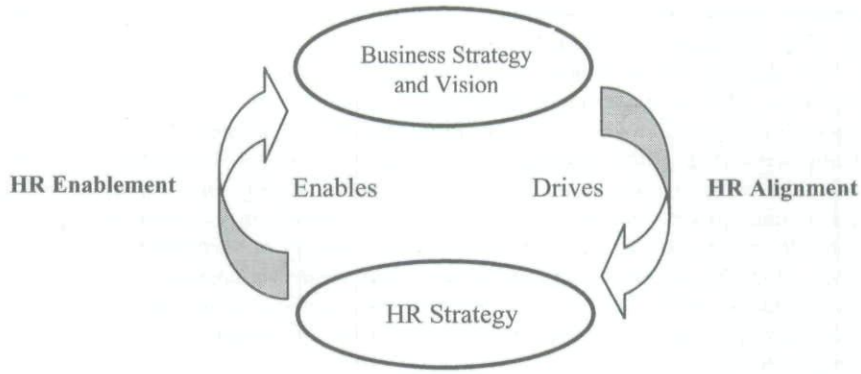

Figure 4 *Two HR strategy aspects*

(Mintzberg, 1994; Stacey, 1992, 1996). This 'processual' view argues that the emerging character of strategy is facilitated by specific employee competences. Said competences are established through an explicit HR strategy, which shapes and modulates the development of the business strategy. We label this aspect 'HR *enablement*', since the business strategy is adapted through employee competences offered by the HR strategy. These competences are needed to address the business characteristics discussed earlier, and refer to knowledge distribution (outside-in look), innovative experiments and initiatives, as well as to the ability to operate agilely in dynamic environments, while responding to various contingencies, dynamics and uncertainties mentioned. The key challenge of organizations is to manage change. As argued, this cannot be accomplished using the traditional methods of control. The HR enablement view addresses this challenge by creating conditions for anticipating, or even leading, change, rather than reacting to it (Brown and Eisenhardt, 1998). This view expresses the fundamental conviction that employees form the crucial core for organizational success. Employees are addressed based on their *creative* potential, rather than their *instrumental* potential. Seen from the creative potential of employees, the HR strategy might further focus on conditions that enable employees to cope with uncertainty and ambiguity of the organizational context, which also follow from more dynamic forms of organizing. As said, these forms are increasingly driven by the technology, market and business trends mentioned before.

Both the alignment and enablement aspects iteratively play a role. Put differently, the interplay between business and HR strategy is an iterative process through which these strategies are emerging. Both strategies are the result, not of a planning process, but of a learning process (Stacey, 1992, 1996; Mintzberg, 1994). This links back to the aspects of organizational learning and innovation. Through this learning process the various trends discussed are integrated into the business/HR strategy development. Figure 4 schematically shows the two driving forces, which iteratively play a role.

In line with earlier observations, HR alignment refers to more stable organizational domains and HR enablement to more unstable domains. This distinction points to the well-known dualism between control and freedom. A general recipe for establishing the iterative interplay between both HR aspects seems therefore not readily available. Various aspects play a role when actually dealing with this dualism, such as, for example, capabilities for control, the level of organizational identity and uniformity

towards customers, suppliers and business partners, as well as the behavioural context in which employees operate. It seems arguable that the ICT developments discussed and their implications will increasingly call upon the capabilities that are offered through HR enablement.

Interestingly, the HR enablement aspect poses the important question of whether such a 'universalistic' approach can be shown to yield better organizational performance than the contingency approach, in which, in a traditional and sequential manner, the human resources strategy is dependent on (follows) the business strategy.

Organizational characteristics of HR alignment and HR enablement processes

As indicated above, the alignment and enablement facets of HR have fundamentally different characteristics, with the latter aspect resting on the Theory Y human resource perspective. Alignment reflects the traditional top-down, planned and analytical process. As said, alignment reflects the characteristics of an instrumental planning process. On the other hand, the enablement process is seen as an emerging, synthetic and bottom-up process, for a considerable part driven by employees. This process has been identified as a learning process where various HR competencies play a role. Establishing this emerging, nomadic process is a crucial condition for organizational success (Collins and Porras, 1994).

From the traditional, mechanistic perspective on organizations, the value patterns (culture), management practices and the various organizational structures and systems existing in organizations generally support the inherent characteristics of the HR alignment process. As can be appreciated, the characteristics of the HR enablement process do not fit very well with the traditional mode of organizational behaviour. Adding to this are traditional paradigms referred to before, which limit the view on the enablement aspects of HR. Clearly, since alignment and enablement will iteratively play a role, organizations have to be competent with respect to both processes. This requirement is not easily satisfied, and might constitute a major roadblock for gaining competitive advantage. Table 1 summarizes the characteristics of both processes.

From the enablement perspective, the human resources strategy should focus on developing employee capabilities that enable the required behaviour, as well as focus on the contextual conditions that stimulate those behaviours. As such, the HR strategies 'proactively address conditions for continuous change', which implies requirements of continuous development of employees (Hendry and Pettigrew, 1992). Next to general aspects of the behavioural context and the development of employee capabilities, specific initiatives can create HR enablement: for example, the creation of an innovation

Table 1 *Characteristics of HR alignment and enablement processes*

HR enablement	HR alignment
Non-linear	Linear
Synthetic	Analytic
Chaotic	Deterministic
Emerging/uncontrolled	Planned/controlled
Bottom-up	Top-down
Loose	Fixed
Proactive	Reactive
Inductive	Deductive

budget, or creating redundancy by allowing employees to spend time on self-defined initiatives, possibly combined with an incremental pilot program that guides the execution of innovative pilot projects with subsequent strategic choices. As such, innovative experiments and strategic learning are incrementally and iteratively intertwined. The use of multiple cross-functional teams of employees that act as the 'corporate skin' by identifying and assessing trends and developments, and translating them into possible strategic initiatives is another example of an initiative manifesting an HR enablement strategy. Various authors have discussed examples in the sense discussed in the above (Leonard-Barton, 1992; Davenport and Prusak, 1998).

Organizational conditions: the need for integrated change

The suggested approach outlined above requires adequate organizational conditions. These conditions refer not only to the integration of HR into business thinking, but, as importantly, to the organizational context in which HR should be deployed. As indicated, this context determines employee behaviour and is defined by the organizational culture, the management practices and the organizational structures and systems. This context should support both the HR alignment and HR enablement process.

Further, operating in the new emerging business context, fundamentally reshaped by technology developments, has been shown to require rethinking of traditional paradigms on employees, management and ways of organizing. Rethinking aims to establish consistency and coherence between technology deployment and the operating context. Most likely therefore, technology introduction entails organizational change, but in itself does not automatically bring change (Turner, 1998). Technology introduction must be harmonized with its organizational context (Yates and Benjamin, 1991). Galliers and Baets (1998) therefore stress the interdependence of the fields of information technology, organizational behaviour, corporate strategy and cognitive psychology. In line with the observations made earlier, the need for an integrated approach regarding organizational change is emphasized. This integrated approach aims to establish coherence and consistency regarding the organizational macro-variables mentioned, which determine employee behaviour (Hoogervorst, 1998). Various authors have stressed the importance of coherence and consistency between various organizational variables. Peters and Waterman (1982) have provided the 7S-model, and advocate coherence between 'strategy, structure, skills, style, shared values and staff'. Miles and Snow (1984) speak of the strategic fit between management processes and the organizational structure. The MIT framework for organizational change offers a comparable picture. Next to strategy and technology, the model speaks of structure, management processes, individuals and roles that need to be mutually consistent (Scott Morton, 1991). Similarly, with respect to re-engineering, Hammer and Champy (1993) identify functions, structures, management systems, measurement systems, as well as values, as important mutually related aspects. As failed technology introductions show, looking at technology alone is insufficient to improve organizational performance (Osterman, 1991).

Multiple examples of failed change programmes prove the importance of mutual consistency between the organizational variables mentioned (Beer *et al.*, 1990; Kaufman, 1992; Kotter, 1995). A renewal process is therefore successful only under consistency and continuity of concepts (Doz and Thanheiser, 1993). Research has clearly linked organizational inertia to segmentation and incoherence, whereas the capacity to change was shown to be related to coherence and integration (Pettigrew, 1998). Hence, the ability to establish integrated change programmes is viewed as an

essential organizational competence. As can be appreciated, this ability is also expressed through the formulation of an integrated business strategy.

Understandably, it is not technology deployment in itself but the integrated approach to this deployment that is difficult for competitors to imitate. Hence, the competence to execute such an integrated approach constitutes a considerable competitive advantage.

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